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(54) **DIRECTIONAL COUPLERS WITH HETEROGENOUS CLADDINGS**

(57) Structures for a directional coupler and methods of forming a structure for a directional coupler. The structure comprises a first waveguide core including a first plurality of segments, and a second waveguide core including a second plurality of segments disposed adjacent to the first plurality of segments in a coupling region. The structure further comprises a first cladding layer comprising a first material that has a first refractive index, and a

second cladding layer comprising a second material that has a second refractive index different from the first refractive index. The first cladding layer adjoins a first sidewall of each of the first plurality of segments and a first sidewall of each of the second plurality of segments, and the second cladding layer adjoins a second sidewall of each of the first plurality of segments and a second sidewall of each of the second plurality of segments.

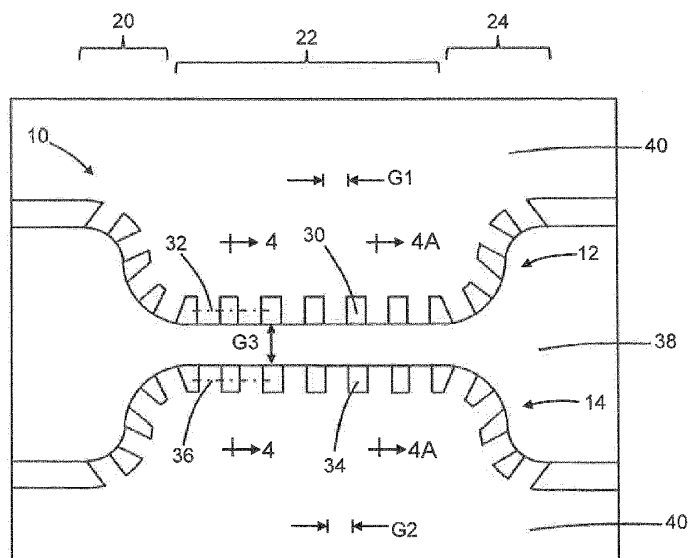


FIG. 3



PARTIAL EUROPEAN SEARCH REPORT

Application Number

under Rule 62a and/or 63 of the European Patent Convention.
This report shall be considered, for the purposes of
subsequent proceedings, as the European search report

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DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	US 2021/294035 A1 (BIAN YUSHENG [US] ET AL) 23 September 2021 (2021-09-23) * paragraphs [0018], [0023], [0030]; figures 1,6 *	1-9,15	INV. G02B6/125 G02B6/12
A	US 10 795 083 B1 (BIAN YUSHENG [US] ET AL) 6 October 2020 (2020-10-06) * abstract; figures 1,4 *	1,15	
A	US 2016/025928 A1 (ONAWA YOSUKE [JP]) 28 January 2016 (2016-01-28) * figures 1B,5 *	1,15	
A	US 7 546 014 B2 (HITACHI CHEMICAL CO LTD [JP]) 9 June 2009 (2009-06-09) * abstract; figures 1-3 *	1,15	
			TECHNICAL FIELDS SEARCHED (IPC)
			G02B

INCOMPLETE SEARCH

The Search Division considers that the present application, or one or more of its claims, does/do not comply with the EPC so that only a partial search (R.62a, 63) has been carried out.

Claims searched completely :

Claims searched incompletely :

Claims not searched :

Reason for the limitation of the search:

see sheet C

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Place of search	Date of completion of the search	Examiner
The Hague	14 August 2024	Lehtiniemi, Henry
CATEGORY OF CITED DOCUMENTS		
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		
T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document		

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INCOMPLETE SEARCH
SHEET C

Application Number

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Claim(s) completely searchable:

1-9, 15

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Claim(s) not searched:

10-14

Reason for the limitation of the search:

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Rule 62a EPC.

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ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.

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5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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14 - 08 - 2024

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